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THE CANADIAN OYSTER INDUSTRY

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BY

M. J. PATTON, M. A.

ASSISTANT SECRETARY OF THE
COMMISSION OF CONSERVATION

Reprinted from the Report of the Commission of Conservation, entitled:
"Lands, Fisheries, Game and Minerals, 1911."

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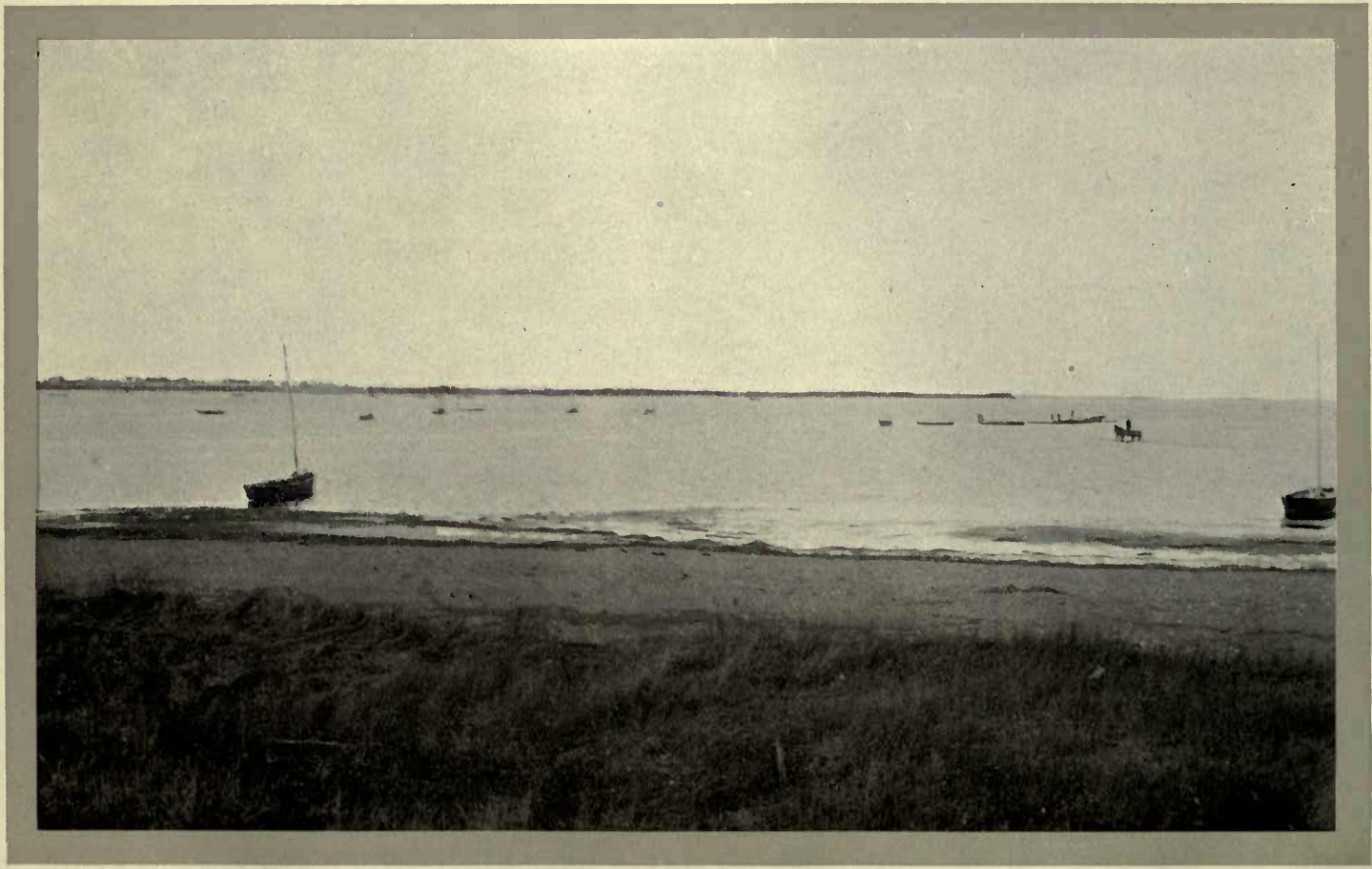


Oyster Fleet in the Offing, Richmond Bay, P.E.I.

THE CANADIAN OYSTER INDUSTRY

By M. J. PATTON, M.A.

Assistant Secretary of the Commission of Conservation

THE Canadian oyster industry is one which is fast dying out. At one time, the supply of oysters was thought to be inexhaustible; but, like nearly all other resources of which this has been predicated, ruthless exploitation and the demand of an increasing population have reduced it to the verge of depletion. Years ago only the larger and more prolific beds were fished; but the decreasing supply has, year by year, compelled the fishermen to resort to the bottoms which heretofore were neglected as not being rich enough to repay the effort of fishing. Very slowly, after repeated warnings by the Government fishery officers on the ground, restrictive measures have been adopted; but these have come too late. In any case, it is doubtful if they alone would have proved adequate to save the industry from depletion without the aid of oyster culture operations. The decision of the Imperial Privy Council on the Fisheries Reference in 1898 divided in uncertain fashion the proprietary interest in the foreshore, and has effectively prevented that certainty of ownership which is essential to the investment of private capital in oyster farming. No man is going to invest his capital where others may claim the fruit of it.

Yet the future of the industry is not so black as one might conclude from these facts. The matter of divided jurisdiction is one that is possible of adjustment as between the Federal and Provincial authorities. The oyster, under favourable conditions, multiplies rapidly and comes to maturity within a period of some four years. The Canadian oyster area is extremely large, and the experience of the United States, England, France, and other countries shows that oyster culture can be successfully prosecuted with the sure return of a handsome rate of profit. What is required, therefore, is a full knowledge of the present condition of the industry, the causes that have brought about that condition, and the regulations and laws in force, so that a sure basis may be laid for determining what measures are best calculated to encourage the adoption of artificial culture on a large scale by private interests.

The Oyster Producing Area

Nearly all the oysters grown in Canada come from the Atlantic sea-board. British Columbia produces, though so far in relatively small quantities, a native oyster (*ostrea lurida*) which is inferior in size and quality to the eastern oyster. The three provinces, however, that produce practically all our oysters are

Prince Edward Island, New Brunswick and Nova Scotia. Since 1871, when statistics are first available, the island province has produced nearly twice as many oysters as New Brunswick, its closest competitor. Nova Scotia comes third. The Atlantic oyster area may be said to be the half-moon shaped shores of Nova Scotia, Cape Breton and New Brunswick, bordering on the gulf of St. Lawrence, with Prince Edward Island as the "star within the nether tip" of this crescent.

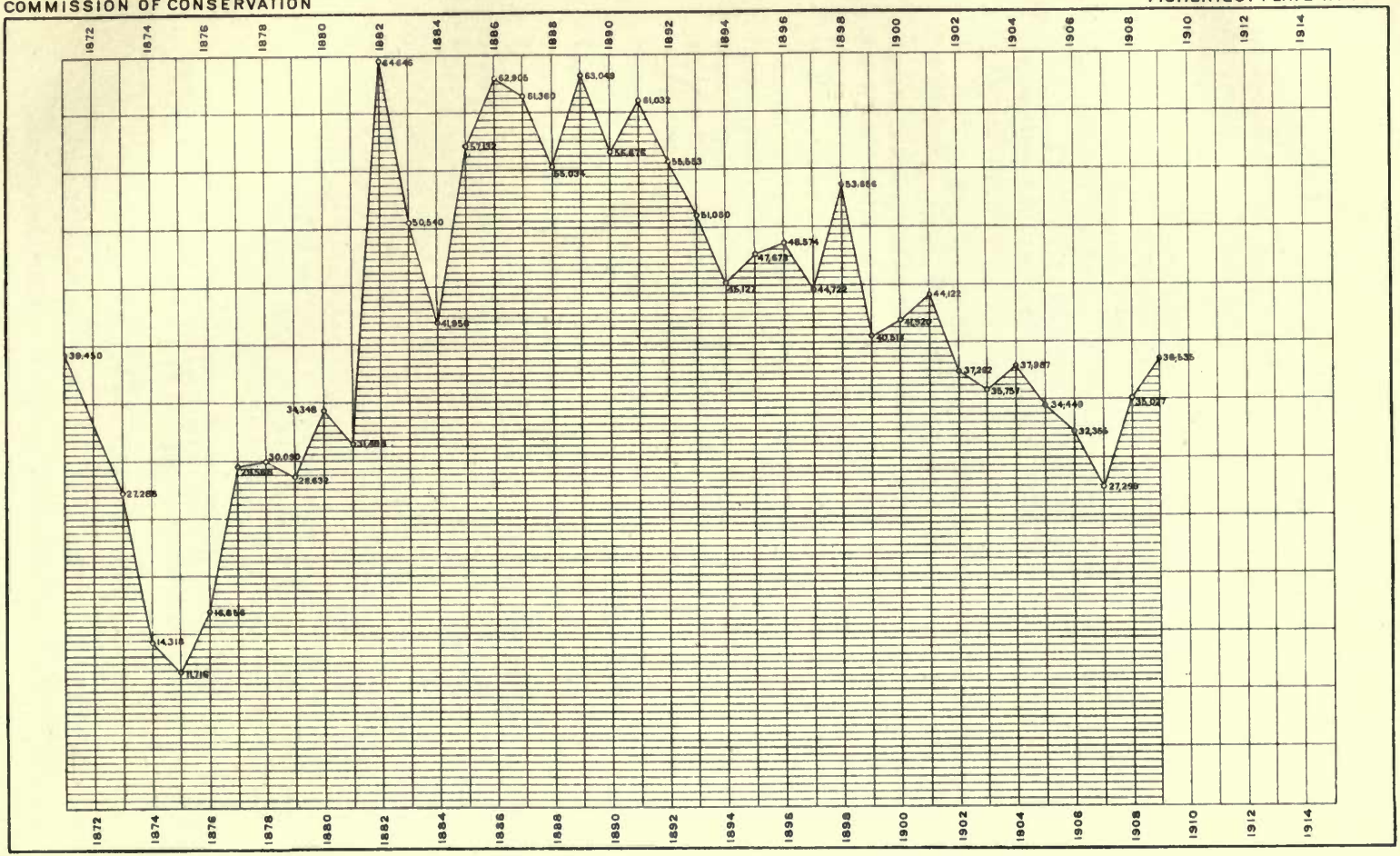
Analysis of Statistics of Production

An examination of the table indicating the production of oysters in all Canada* shows that the industry was at its zenith in the eighties and early nineties. The high point was reached in 1882 with a production of 64,646 bbls. During the whole period from 1882 to 1893, the yearly production never fell below 50,000 bbls. save in one year. The second stage in the decline is noted in the years 1894-1901. During these years, the annual yield ranged between 40,000 and 50,000 bbls., except in 1898 when it was 53,656 bbls. The third stage in falling production enters with the year 1902. Never since 1901 has the yield risen above 40,000 bbls. From the beginning of this third stage, there has been a gradual but sure decrease in production, the lowest point in thirty years' history of the oyster fishery in Canada being reached in 1907 when only 27,299 bbls. were harvested. The larger catch of the past two years is due to the more intensive methods of fishing that have been adopted as a result of high prices, rather than to any actual increase in supply.

So much for the production in Canada as a whole. Let us now examine the production records† of each of the oyster-producing provinces and see just where the greatest shrinkage has occurred. Considering the whole time the fishery has been engaged in, Prince Edward Island has given us more oysters than any other province. In 1882 the oyster crop of that province reached its maximum with a yield of 57,042 bbls. The yield of this year, however, was rather abnormal. Yet, during the whole period from 1880 to 1891, the industry was remarkably healthy, the annual production averaging nearly 35,000 bbls. Beginning with 1892, the production began to fall off. In 1891, it was 41,030 bbls.; in 1897, 20,915; in 1906, it shrank to 14,988 bbls.; and in 1907 it reached its minimum point with a yield of only 9,672 bbls. A decrease of over 47,000 bbls. in twenty-five years is the record of Prince Edward Island.

The other provinces do not show up so badly as Prince Edward Island. New Brunswick reached the height of its production in 1885-1890 with an annual average of approximately 21,000 bbls. After that, production declined to 12,470 bbls. in 1903. Since then it has been on the increase. In Nova Scotia, the proportionate decrease has been large;

* See p. 17
† See table on p. 19



OYSTER PRODUCTION IN CANADA FROM 1871 TO 1909

Figures denote number of barrels

but the small production of the province does not greatly affect the total for Canada. In British Columbia, the industry has never assumed large proportions.

This analysis indicates that it is in Prince Edward Island that oyster fishing has declined most. Yet, in each province there has been a falling off. Of course, if individual years only be selected, a conclusion with regard to the state of the industry which is not true can easily be reached. But if we consider the production over a period of years, the one conclusion is inevitable: the oyster industry is fast nearing a state of absolute depletion.

The Demand

This, too, in the face of a demand that is increasing year by year. Improved railway facilities have extended the margin of the oyster market far inland. Prices, during the past twenty years, have increased by fully 240 per cent* and large quantities have had to be imported from the United States. If we lump together oysters imported in all forms,† we find that, in 1909-10, Canadians consumed about 389,500 gals., raw and canned, of foreign-grown oysters. And this large quantity was imported in spite of the existence of a duty ranging from 17½ to 25 per cent. on oysters in the shell, and from 1½c to 3c a pint for those shelled or preserved. The total value of oysters imported in 1909-10 was $369,166, and the duty paid on them was $43,669. In other words, we are paying to other countries in excess of $350,000 per year for a product which we ourselves could produce in quantity more than sufficient to supply home consumption if only proper encouragement and safeguards were given to the industry.

Natural History

In order intelligently to understand the question of the depletion of our oyster beds and the measures necessary for the rehabilitation of the industry, some points in the natural history of the mollusc must be called to mind. The oyster is a bivalve. The two valves or halves of the shell are joined together by a hinge which allows the oyster to gape so that water may be inhaled. It is by straining from this water the minute solid portions of marine animal and vegetable life that the oyster obtains the food on which it subsists. It is found upon the sea shores in a depth of a few feet of water and, being a brackish water form, flourishes best where streams of fresh water empty into the

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* The following price statistics, kindly supplied by A. Wilson & Son, of Halifax, show the rise in wholesale prices since 1890. The prices are those obtaining on or about Nov. 1 each year and are quoted f.o.b., point of shipment from fishing grounds.

In 1890, the price was $1.90 per bbl.

From 1890 to 1895, the price was from $2.00 to $2.30 per bbl.

From 1896 to 1907, the price rose from $2.30 to $4.50 per bbl.

In 1908 and 1909, prices averaged $6.50 to $7.00 per bbl., the maximum being $10.00.

† Statistics compiled from Report of Customs Dept. for 1910, pp. 98-100.

ocean. The degree of salinity of the water is an important factor in successful oyster farming, as is also the temperature. Reproduction takes place during the late spring and early summer. Some idea of the remarkable fecundity of the oyster may be gathered from the fact that each female produces every season from 50 to 100 million eggs.* The fertilized ova are known as spat. This spat swims about for a short period (about two or three weeks) and finally attaches itself to some smooth hard surface to which it adheres for the rest of its days. A requirement of first importance in oyster culture is that there be a suitable substance (commonly called cultch) to which the spat may attach itself. Old oyster shells are generally used for this purpose but the spat will attach itself to any hard clean substance such as tiles, old bottles, iron piping, clay pipes and the like.

Depletion—Its Causes and the Remedies

What, we may well ask, is the cause of the ruin of an industry that other nations have found a source of immense profits? The cause, in general terms, is the blind disregard for the future shown by those engaged in it and by those charged with its protection. One feels a sense of shame at the wanton waste that is revealed in the history of the Canadian oyster industry. In early years, oysters were actually burned in order to obtain the lime contained in the shells. Ice fishing, which was not prohibited by law until the past decade, was another prolific cause of waste. The oysters were raked up from the bottom through a hole in the ice, the large ones sorted out for market and the small ones left on the ice to perish with the cold. As late as 1891, we find inspectors in their reports urging that a law be passed to prevent the wholesale destruction of all the oysters taken that were not large enough for marketing. The practice was to take the catch to the beach and there sort it over, reserving the large oysters for sale and leaving the small ones in great heaps on the shore to rot.

But it is the mud-diggers that take the palm as agents of destruction. When winter comes and the ice forms, great power digging machines may be seen dotting the ice over the oyster beds. The farmers consider that the mud and oyster shells, with their large percentage of lime, are valuable as a fertilizer for the land, and every winter these machines cut the oyster beds to pieces and suffocate all the oysters round about by the deposits of mud that settle down. Great destruction has been caused by this means and it is worth noting that the danger from it still exists. These conditions have since been remedied, in part at least, by legislation; but restrictive measures were adopted with such slowness that extensive damage has been done which is irreparable.

* J. L. Kellogg: *Shell-Fish Industries*, p. 24. See also Prof. E. E. Prince's *Peculiarities in the Breeding of Oysters* (1895), p. 13.

MUD DIGGING MACHINE AT WORK ON THE OYSTER BEDS, BEDEQUE BAY, P.E.I.

Regulations

It is instructive to note just how far legislation has attempted to remedy these evils. In 1890, the only regulation in existence was that there should be a close season from June 1st to September 15th.*

Apart from this restriction, any person could rake oysters at any place and in any manner he pleased, wholly regardless of the size of the oysters taken or of injury to the beds. The close season has been lengthened from time to time until now it is from April 1st to September 30th, inclusive, except in British Columbia, where it extends from May 1st to August 31st, inclusive. Ice fishing has been prohibited, as has also been night and Sunday fishing. A size limit has been established, and at the present time no person is allowed to take or have in his possession, round oysters of a less diameter than three inches, or long oysters of a less diameter than three and a half inches of outer shell. Mud digging is prohibited within 200 yards of any live oyster bed, and then may be prosecuted only at such places as may be prescribed by a fisheries officer. A fee of 50c. is levied on each boat with one fisherman, and 50c. additional is charged for each extra man fishing from the same boat. In British Columbia, a charge of $2.50 is imposed on persons wishing to fish for oysters on natural beds, and a rental fee of $2.00 per acre per annum covered by such license, is levied.

Dispute over Jurisdiction

These regulations, on the whole, are not unsatisfactory. The essential fact to grasp, however, is that the industry cannot be regenerated by restrictive measures alone. What is needed is the institution of private oyster culture on a large scale. But that cannot be thought of till the present dispute as to the rights of the Dominion and Provincial Governments to issue leases for fishing is definitely settled, once and for all.† The exploitation of oyster beds, it is true, has yielded enormous profits to capital wherever it has been persistently and scientifically engaged in; but even these large returns will not attract men of means to invest if the title to the oyster areas be clouded.

* Fisheries Report, 1898, p. 295.

† Representatives of the three Maritime Provinces who met at Moncton, N.B., on May 6 and 7, 1910, to consider the oyster industry came to the following conclusions regarding this phase of the subject:

"That we believe that the culture of oysters by private individuals on areas leased for that purpose will undoubtedly result in a much improved condition of and a larger production from the public beds, and we strongly recommend that every encouragement and the fullest protection should be accorded to those engaged in such culture.

"That the present apparent conflict of jurisdiction between the Dominion and Provincial authorities should be so arranged that those engaging in the private cultivation of oysters will have security in the titles to leases and be afforded adequate protection for the investment of capital, and to this end we recommend that a conference be held at an early date between the Dominion Government and representatives of the Governments of the Maritime Provinces concerned."

The matter has been rocking in the judicial balance since 1898, and at the present time the question, in its relation to British Columbia, is before the Supreme Court for adjudication. It centres about the interpretation of section 91 of the British North America Act. This section of the Act says that the Dominion Parliament has exclusive legislative authority in all matters respecting "Sea Coast and Inland Fisheries." Section 92 of the Act, however, gives the provinces exclusive power to issue licenses to provide funds for provincial revenue. It would appear from this that the fisheries, and the oyster industry along with them, may be subjected to double taxation at the hands of the Dominion and Provincial Governments.

The following questions relating to fisheries were submitted to the Judicial Committee of the Imperial Privy Council in the Fisheries Reference of 1898:*

> "(5) Had the riparian proprietors before confederation an exclusive right of fishing in non-navigable lakes, rivers, streams, and waters, the beds of which had been granted to them by the Crown?
>
> "(6) Has the Dominion Parliament jurisdiction to authorize the giving by lease, licence, or otherwise, to lessees, licensees or other grantees, the right of fishing in such waters as mentioned in the last question, or any and which of them?
>
> "(7) Has the Dominion Parliament exclusive jurisdiction to authorize the giving by lease, license or otherwise to lessees, licensees or other grantees, the right of fishing in such waters as mentioned in the last question, or any, and which of them?
>
> "(8) Has the Dominion Parliament such jurisdiction as regards navigable or non-navigable waters, the beds and banks of which are assigned to the provinces respectively under the British North America Act, if any such are so assigned?
>
> "(9 If the Dominion Parliament has such jurisdiction as mentioned in the preceding questions, has a Provincial Legislature jurisdiction for the purpose of provincial revenue, or otherwise, to require the Dominion lessee, licensee or other grantee to take out a provincial license also?"

The substance of the decision is contained in the following quotations from the award handed down:†

> "Their Lordships are of opinion that the 91st section of the British North America Act did not convey to the Dominion of Canada any proprietary rights in relation to fisheries. Their Lordships have already noticed the distinction which must be borne in mind between rights of property and legislative jurisdiction. It was the latter only which was conferred under the heading 'Sea Coast and Inland Fisheries' in s. 91. Whatever proprietary rights in relation

*Appeal Cases, 1898, p. 702, *et seq.*
†Ibid, p. 712, *et seq.*

to fisheries were previously vested in private individuals or in the provinces respectively remained untouched by that enactment. Whatever grants might previously have been lawfully made by the provinces in virtue of their proprietary rights could lawfully be made after that enactment came into force. At the same time it must be remembered that the power to legislate in relation to fisheries does necessarily to a certain extent enable the Legislature so empowered to affect proprietary rights. . . . . The suggestion that the power might be abused so as to amount to a practical confiscation of property does not warrant the imposition by the Courts of any limit upon the absolute power of legislation conferred. The supreme legislative power in relation to any subject-matter is always capable of abuse, but it is not to be assumed that it will be improperly used; if it is, the only remedy is an appeal to those by whom the Legislature is elected. If, however, the Legislature purports to confer upon others proprietary rights where it possesses none itself, that, in their Lordships' opinion, is not an exercise of the legislative jurisdiction conferred by s. 91. . . . . .

"In addition, however, to the legislative power conferred by the 12th item of s. 91, the 4th item of that section confers upon the Parliament of Canada the power of raising money by any mode or system of taxation. Their Lordships think it is impossible to exclude, as not within this power, the provision imposing a tax by way of license as a condition of the right to fish.

"It is true that, by virtue of s. 92, the Provincial Legislature may impose the obligation to obtain a license in order to raise a revenue for provincial purposes; but this cannot, in their Lordships' opinion, derogate from the taxing power of the Dominion Parliament to which they have already called attention.

"Their Lordships are quite sensible of the possible inconveniences to which attention was called in the course of the arguments, which might arise from the exercise of the right of imposing taxation in respect of the same subject-matter and within the same area by different authorities. They have no doubt, however, that these would be obviated in practice by the good sense of the legislatures concerned."

Briefly expressed, the gist of the judgment is that the British North America Act did not convey to the Dominion any proprietary rights in fisheries, although it did convey the right of legislative jurisdiction. This latter, it was admitted, enables the Federal Government to affect the proprietary rights of the provinces to almost any extent, short of transferring them to others. Thus, whatever proprietary rights in relation to fisheries were previously vested in private individuals or in the provinces were not affected by the British North America Act. The enactment of fishing regulations and restrictions was held to be within the exclusive competence of the Dominion. It was further decided that the Dominion had power to levy a tax or license as a condition of the right to fish, and that the Provincial Parliaments, by virtue of section 92, had the same power.

This decision leaves the oyster fisherman in a most anomalous position. First, the province has the proprietary right to practically all the foreshore where he wishes to plant his oysters. Yet the Dominion Government, having exclusive legislative jurisdiction, can impose all sorts of restrictive measures as to close seasons, size limits, gear used, and the like, up to the point of rendering the fishing privilege worthless. Second, he cannot take oysters off the beds without paying for a license from the Dominion authorities. But, at the same time, he may be subjected to an additional tax levied by the Provincial Government. Up to the present, the provinces have not availed themselves of this taxing power. Nevertheless, it is within their right, and acts as a threatening possibility to prevent private oyster culture. It is significant that the province of Nova Scotia is now considering action to impose a provincial tax.* Is it any wonder, then, with all this confusion and uncertainty, that every effort to interest private capital in the development of this industry has been futile?

The important point, however, is the solution of the difficulty. A test case in which British Columbia is the principal, is now before the Supreme Court of Canada, and it is within the range of possibility that the dispute may be settled soon in a manner satisfactory to both parties. On the other hand, the law is exceedingly prone to delay, and every year settlement is delayed the oyster industry is in a worse condition. If the Provincial and Dominion authorities met together in friendly conference, with a fixed idea that the case must be settled at once, it is altogether likely that an agreement could be reached immediately that would be much more acceptable than any decision by the Courts. Three points are now fairly well settled. It has been decided that the provinces have a proprietary right in all oyster lands held by them previous to Confederation. It is conceded that the Dominion has power to impose restrictive measures on the fishing of these beds, which, if exercised to the full, would practically render them useless for oyster-producing purposes. The third settled point is that the provinces, as well as the Dominion, have the right of taxing the oyster fishermen. Would it not be the reasonable and the expedient course for an understanding to be reached whereby the exclusive power to lease oyster bottoms should be handed over to the Federal authorities in return for giving to the provinces a certain percentage of the revenue to be agreed upon? Federal jurisdiction should be given the preference over provincial, because then there would be no working at cross purposes as between provinces, to the detriment of the industry. In addition, the Dominion now has all the organization required to take over the admin-

* Letter of Hon. A. K. Maclean, Attorney General of Nova Scotia, Oct. 18, 1910.

READY FOR THE OYSTER BEDS

istration of such a scheme. This conciliatory course would undoubtedly contribute much further towards a permanent solution of the question than would any arbitrament of law.

Free Fishing

So much for the legal side of the matter. That must first be dealt with because it presents the primary difficulty to the establishment of private oyster farms. As soon as the jurisdiction is definitely determined, the supreme administrative authority can direct its attention to the removal of the existing evils preying upon the oyster industry. One of the chief of these is free fishing. During the open season anyone, upon payment of a nominal boat license of 50c., can take oysters off any part of the Atlantic oyster area, with the exception of some 3,382 acres reserved for artificial propagation of oysters by the Dominion Government. Formerly, when any restriction on free fishing was proposed, there was a great deal of opposition aroused in the oyster-producing provinces. One of the arguments usually advanced was that it would come hard on the poor, who looked forward to making enough money in the oyster season to tide them through the winter. The harvest of the sea was considered as everyone's right. The policy pursued was that of every man for himself. When oysters were plentiful, this unrestricted fishing privilege, of course, militated against oyster culture by individuals. But now conditions are changed. Oysters are growing less plentiful year by year, and people conversant with the true situation are less likely to oppose fair restrictive measures for the preservation of the supply. They realize that resort must be had to measures that are somewhat heroic. Other countries, when their oyster beds were nearing depletion, have found it advisable to prohibit fishing for three or four years on a certain fraction of their unleased oyster area, say, one-third or one-quarter; and when one reserved portion is thrown open to fishing, the same area in another part is set aside. At the end of the nine or sixteen years, this expedient has been found to have resulted in a much improved condition of the beds. The present low state of the industry in Canada makes this plan one that could be temporarily adopted without serious opposition.

Leasing System

An equitable system of leasing or licensing oyster areas can be evolved once the jurisdictional dispute is settled. The present Fisheries Act* authorizes the issuing of leases or licenses to persons wishing to plant oyster beds, and gives such persons the exclusive right to the oysters found thereon. A maximum area to be leased to one individual should be fixed and monopoly thereby prevented. Although these licenses may be issued for any length of time, the practice has been to limit them to nine years, renewal being optional with the Minister of

* R. S. C., Chap. 45, s. 67.

Marine and Fisheries. The areas set aside by the Government for the natural and artificial propagation of oysters are as follows:

Portion of York river, P.E.I.*	200 acres†
Portion of Big Tracadie harbour, N.S.	1,985 acres†
Portion of Shediac harbour, N.B.	1,197 acres†

Until the Imperial Privy Council decision of 1898 put the quietus on leasing, considerable areas had been let. At the present time, only a very small area‡ is held under license, distributed as follows:

Prince Edward Island	4 acres
New Brunswick	19 acres
British Columbia	138 acres

The nominal fee of $1 an acre is charged for licenses. The regulations set no limit to the term for which licenses may be granted but the practice has been to grant them for a period of nine years, subject to renewal at the Minister's option. In British Columbia, a charge of $2.50 is imposed on persons wishing to fish for oysters on natural beds, and a rental fee of $2 per acre per annum covered by such license, is levied.

It is needless to recount the advantages that would ensue from the leasing of oyster bottoms to individuals, once jurisdiction is settled. In all other countries, the adoption of private property in oyster lands, as in the case of agricultural lands, has marked the beginning of real progress in the industry. It may be suggested that the present regulations should be amended by fixing a definite maximum area that one person or corporation is allowed to hold or control. For the better encouragement of private enterprise, the term of the lease or license could well be lengthened to eleven or twelve years, and renewal should be made contingent upon fulfilment of conditions of the lease, not upon the Minister's option. It would be inadvisable, at least for the first six years of the lease, to increase the annual rental charge of $1 an acre.

Government Oyster Culture

If the full benefit is to be derived from a system of leasing oyster areas to private persons, some means must be taken by the government to supply spawners and seed oysters at cost price. This would not have been necessary if private culture had been possible before the natural beds had been reduced to their present condition. As the situation is at present, some difficulty would be experienced by oyster farmers in getting sufficient seed oysters and spawners to plant their beds. The government conducts no operations of this kind now. All its efforts have been purely demonstrational. It has shown by raising oysters on bottoms not naturally stocked, that oyster

* Not now considered as an oyster reserve as it has filled up with mussels. —Letter of Hon. F. L. Haszard, Nov. 10, 1910.

† Computed approximately.

‡ Communication from Dept. of Marine and Fisheries, Oct. 17, 1910.

culture can be successfully prosecuted under such conditions. This is not enough, and when oyster farmers can get a satisfactory title to oyster areas, they should be further encouraged by the assurance of a supply of seed oysters and spawners for stocking their holdings.

Scientific Investigations

A complete survey of the oyster producing area to chart and classify the natural reefs is essential. The extent of this area is not now known, the Fisheries officials characterizing it as "Practically unlimited." The Marine Biological Stations should be re-organized and their duties enlarged to take in this work. They should also undertake exhaustive scientific observations to determine to what extent different areas are suited for growing oysters. The public should have the benefit of investigations showing the salinity, temperatures and nutritive value of the water in the area supposed to be suitable for oyster culture. Ignorance of fundamental natural conditions often leads to large losses of capital invested in oyster farming and tends to discredit the industry.

Mud Digging

The evil of the mussel mud digger has already been adverted to. The regulations now permit the digging to be done not nearer than 200 yards from a live oyster bed and then only when a fishery inspector's permit is given. It would be a proper subject of investigation whether or not these regulations were being properly enforced.*

The evil has been particularly evident in Prince Edward Island and it is extremely doubtful, in the case of the sandy loam of that Province, whether the fertilizer of mud and decomposing oyster shells has all the virtues ascribed to it by the farmers. The caustic action of the lime destroys the rich vegetable humus, an especially necessary constituent in light soils. Dr. Cyril G. Hopkins, one of the most eminent authorities on agriculture in the United States, says:

> "This use of lime on a soil which is already deficient in nitrogen or other plant food, only serves to still further exhaust the soil of its meagre supply of these elements. Without a doubt, this is the most common condition and the most common effect of the continued use of caustic lime. It is true that the immediate effect is usually somewhat increased crops, but it should be borne in mind that when

* At a conference of representatives of Nova Scotia, New Brunswick and Prince Edward Island at Moncton, N.B., on May 6 and 7, 1910, to consider the oyster industry, a resolution was passed with respect to the enforcement of the oyster regulations which states

"That a stricter supervision on the part of the Fishery Wardens is required in order that the regulations of the Department should be faithfully observed; that to this end officials for the general enforcement of the Fishery Regulations should be appointed who are not interested either as fishermen or dealers, and who will devote their whole time to the duties assigned them; and that in the interest of the industry a proper system of selection and inspection should be inaugurated."

a farmer pays out money for lime to be used for this purpose, he is purchasing a stimulant which will ultimately leave his land in worse condition than before, especially in the loss of nitrogen and organic matter.''*

Experience of Other Countries

The experience of other countries coincides with that of Canada in that oyster beds that were thought inexhaustible became badly depleted by unrestricted fishing. In every case, however, where government interfered with wise regulations and made use of the services of scientific men, the industry has been revived. The solution has invariably been found in private oyster culture.

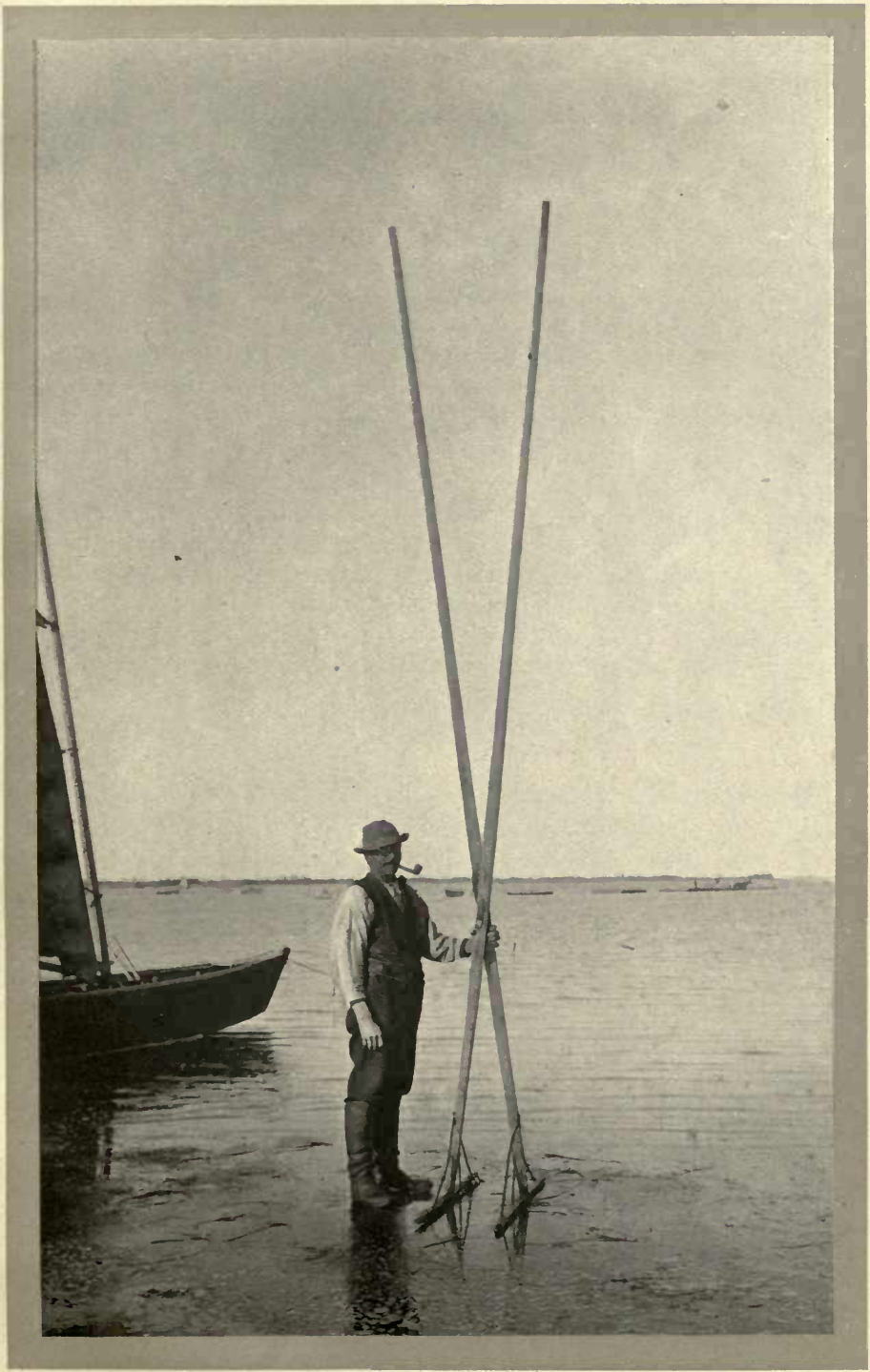
France

The experience of France is instructive. In the early years of the nineteenth century, the natural beds were believed to be inexhaustible. The supply of oysters had increased to an amazing extent during the suspension of fishing caused by the Napoleonic wars. When peace was concluded, the beds were the resort of a largely increased number of fishermen. The supply began to fall off rapidly about the middle of the century and the government sought remedial measures. Owing to the strenuous and patient efforts of Le Bon and Coste, artificial propagation was proved successful beyond a doubt; not, however, before costly set-backs had been experienced because the habits of the oyster and the environment necessary for its growth had not been sufficiently studied at the beginning. Oyster grounds that were formerly public property were leased to individuals, protection was afforded against poachers and the industry was placed on a permanent and paying basis. To-day oyster farming is ranked among the most profitable industries of France.

England

The English oyster industry is not as extensive as that of France. However, the same story of depletion from unrestricted fishing is true of England as it is of France. Until 1866, when the old laws enforcing a close season were repealed, it is stated there were about 700 men, working 300 boats, employed at Falmouth. In 1876, only 40 men and 40 boats could find employment, and a boat could get only from 60 to 100 oysters a day where formerly from 10,000 to 12,000 could be taken.† Before the English Commission for the Investigation of Oyster Fisheries, 1876, it was testified that one man fishing in Emsworth harbour between 1840 and 1850 could take from 24,000 to 32,000 oysters in five hours. In 1868, on account of over-fishing, a dredger, in the same time, could not secure more than twenty.

*Hopkins: *Soil Fertility and Permanent Agriculture*, p. 164.
†W. K. Brooks: *The Oyster*, p. 73.



OYSTER FISHERMAN WITH TONGS

Since that time capital has been largely invested in oyster farming and strong companies have obtained control of large areas of oyster bottoms. Scientific methods have been adopted, and the industry is now on a permanent and paying basis.

Japan

In Japan, too, grounds for oyster growing are rented to private individuals. Oyster culture has been practised since ancient times and has been found very profitable. It is easily carried on there because the coastal waters are not muddy, bamboo is a cheap collector of spat and there are few natural enemies in those waters.

Rhode Island

The administration of the oyster beds of this State was placed under a Shell Fish Commission as early as 1864. The natural oyster beds are left open to free fishing and only those areas which can be utilized by cultch planting and the planting of seed oysters and spawners, are leased to private individuals and corporations. The leasing charge ranges from $5 to $10 per acre, the term of the lease being not less than five nor more than ten years. In 1900, the receipts were only $20,973.08. In 1909, the leased lands covered an area of 16,814.7 acres and brought in a revenue of $104,576.49. The case of Rhode Island demonstrates what a profitable source of revenue to the State even the potential and unimproved oyster bottoms can be made.

Connecticut

The Shell Fish Commissioners in Connecticut are authorized to tax oyster lands at one and a half per cent. of their valuation. Oyster bottoms are leased to private interests. For a 5-ton boat a license fee of $5 is charged and for larger craft, a fee of $1.50 per additional ton. In 1909-10, the total revenue from the oyster industry was $27,265.48.

Maryland

The oyster areas of Maryland are administered under the Haman Law of 1906. It provides that only the barren bottoms shall be leased for culture purposes to residents of the State, the natural beds being reserved for public fishing. The term of the lease for barren bottoms is twenty years, and the rental fee increases from $1 per acre for the first year to $5 per acre for the sixth and succeeding years. The area that one person may hold under lease varies from 1 to 10 acres within the territorial limits of any county, and from 5 to 100 acres beyond the county limits. The Shell Fish Commission, which administers the industry, has recommended that the maximum area of bottoms which may be leased to one person be increased to 30 acres in the first instance and to 500 in the second. It has also suggested that the rental charge be reduced to $1 per acre.

Louisiana

The State of Louisiana enjoys oyster laws of the most progressive kind and these, together with the favourable natural conditions, have combined to make private planting remarkably successful. The first feature to note is that at least seventy per cent. of the natural oyster reefs of the State are to be reserved from leasage forever and are open to public fishing. As to the residue, no person or corporation may lease or control more than 1,000 acres. Each lessee may be apportioned natural reefs to the extent of not more than twenty per cent. of the total area of reefs granted him, the remaining eighty per cent. consisting of depleted reefs. In any case, no one may lease more than 150 acres of natural reefs. The rental charge is $1 per acre for depleted reefs and $5 per acre for natural reefs. In addition, there is a tax of 3c. per barrel on all oysters marketed and a boat license fee of 50c. per ton. The term of the lease is for fifteen years and is renewable for a further term of ten years, thus giving an assured tenure of sufficient duration to prove attractive to oyster culturists.

The oyster law forming the basis of the present legislation was introduced in 1902. The effect has been astounding. In the five years preceding the enactment the increase in production, which was mainly from the natural beds, was twenty per cent., while in the first five years following the passage of the Act, and after it had been approved and amended, the increase was a hundred and fifty-four per cent. In 1902, the catch was 1,198,413 bushels; in 1905, it was 2,187,000; while, in 1908, it reached the high total of approximately 3,600,000.

The case for oyster culture is, indeed, a strong one. Wherever it has been given a fair trial, in England, Holland, France, Japan or America, it has proved its worth. Statistics are not lacking to demonstrate how valuable an industry it may be made. The United States is a case in point. In that country, the value of the annual oyster supply is $18,000,000 and of this amount $10,000,000 worth comes from planted beds. Canada has splendid natural conditions for the production of oysters by artificial propagation, and it is high time that steps were taken to enable oyster farmers to begin operations.

Profits

The fact that oyster planting has been extended to wider and wider areas in those countries where it is permitted, is proof enough that it is a paying proposition. The main cause of disappointment and loss is ignorance of the biology of the oyster and of the environment necessary for its growth. If, as suggested, the work of the Marine Biological Stations were enlarged to make clear these points, prospective oyster culturists in Canada could not complain on this score. The capital required for oyster culture is exceedingly small and as the mollusc is fit for market in about four years, the investment does not remain long without paying dividends. It is instructive to note that in

the recent flotation of the stock of a large consolidation of oyster companies in the United States, the promoters advertise that one of the constituent companies has paid average annual dividends of about sixty per cent. since 1904, and another, of about two hundred per cent.*

In conclusion, it may again be said that the rehabilitation of the oyster industry in Canada depends on the immediate establishment of oyster culture by private persons. That is the great desideratum to the accomplishment of which all efforts should be directed. The supreme hindrance to its adoption is the conflict of jurisdiction between the Dominion and the Provinces. That can be settled if every effort is concentrated upon it. When once an understanding has been reached regarding it, the remaining subordinate problems can be solved easily and quickly. The paramount consideration is that action must be taken NOW. If Province and Dominion will only throw *laissez-faire* to the winds, there is not the slightest doubt but that Canada's oyster industry would speedily come to its own, and munificently reward all the honest toil bestowed upon it.

OYSTER PRODUCTION IN CANADA †

Year	Barrels
1871	39,450
1872	no record
1873	27,288
1874	14,318
1875	11,716
1876	16,856
1877	29,568
1878	30,090
1879	28,632
1880	34,348

* See "World's Work," October, 1910, advertising section.

† Figures for 1871-1875 are taken from statistics by J. Hunter Duval, given in Fisheries Rept., 1898, p. 283.

Figures for 1876-1897 are taken from statistics by Prof. E. E. Prince in Fisheries Rept., 1898, p. 353.

The remaining figures are from the annual Fisheries Reports, except the British Columbia figures, 1897-1908, which were supplied direct from the Fisheries Department.

OYSTER PRODUCTION IN CANADA—*continued*

Year	Barrels
1881	31,498
1882	64,646
1883	50,540
1884	41,956
1885	57,132
1886	62,905
1887	61,360
1888	55,034
1889	63,049
1890	56,676
1891	61,032
1892	55,553
1893	51,080
1894	45,127
1895	47,673
1896	48,574
1897	44,722
1898	53,656
1899	40,513
1900	41,920
1901	44,122
1902	37,292
1903	35,757
1904	37,987
1905	34,449
1906	32,355
1907	27,299
1908	35,027
1909	38,535

OYSTER PRODUCTION BY PROVINCES

(Barrels)

Year	P. E. I.	Nova Scotia	New Brunswick	British Columbia	Year
1876	7,905	1,040	7,911	.....	1876
1877	20,850	980	7,738	.....	1877
1878	17,902	912	11,270	.....	1878
1879	18,145	1,067	9,420	.....	1879
1880	20,297	1,861	12,280	.....	1880
1881	20,815	2,270	8,413	.....	1881
1882	57,042	1,745	5,859	.....	1882
1883	38,880	1,343	10,317	.....	1883
1884	28,290	1,595	11,851	220	1884
1885	28,204	1,310	27,368	250	1885
1886	33,125	1,397	28,083	300	1886
1887	36,448	1,716	23,196	.....	1887
1888	35,861	1,589	16,384	1,200	1888
1889	41,257	2,532	17,760	1,500	1889
1890	35,203	3,013	16,710	1,750	1890
1891	41,030	4,318	14,934	750	1891
1892	32,937	3,776	17,840	1,000	1892
1893	29,627	3,488	16,365	1,600	1893
1894	24,055	2,512	16,960	1,600	1894
1895	25,463	2,540	18,070	1,600	1895
1896	30,214	2,460	14,700	1,200	1896
1897	20,915	2,372	19,835	1,600	1897
1898	26,484	2,097	22,675	2,400	1898
1899	18,236	2,027	17,250	2,400	1899
1900	17,825	1,855	19,240	2,400	1900
1901	24,972	1,690	14,460	3,906	1901
1902	20,334	1,663	12,795	3,906	1902

OYSTER PRODUCTION BY PROVINCES—*continued*
(Barrels)

Year	P. E. I.	Nova Scotia	New Brunswick	British Columbia	Year
1903	18,333	1,354	12,470	4,390	1903
1904	18,006	1,411	15,320	3,125	1904
1905	17,656	1,466	14,300	1,605	1905
1906	14,988	1,722	14,920	1,132	1906
1907	9,672	1,337	15,435	1,336	1907
1908	11,472	1,515	19,080	2,960	1908
1909	13,519	1,716	19,340	3,960	1909

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